WHAT IS CLAIMED IS:

1. A sample observation method using a scanning electron microscope, comprising the steps of:

irradiating an electron beam to a sample at a first incident angle, and detecting a secondary signal emitted from the sample to capture a scanning electron microscope image of the sample;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images at the first incident angle;

irradiating the electron beam to the sample at a second incident angle different from the first incident angle, and detecting a secondary signal emitted from the sample to capture a scanning electron microscope image of the sample;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images at the second incident angle;

extracting most in-focus image domains from each of the plural scanning electron microscope images captured at the first incident angle, and creating a first all in-focus image being in focus over the whole image;

extracting most in-focus image domains from each of the plural scanning electron microscope images captured at

the second incident angle, and creating a second all in-focus image being in focus over the whole image; and

observing a stereoscopic view from the first all in-focus image and the second all in-focus image.

2. A sample observation method using a scanning electron microscope, comprising the steps of:

irradiating an electron beam to a sample at a first incident angle, and detecting a secondary signal emitted from the sample to capture a scanning electron microscope image of the sample;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images at the first incident angle;

irradiating the electron beam to the sample at a second incident angle different from the first incident angle, and detecting a secondary signal emitted from the sample to capture a scanning electron microscope image of the sample;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images at the second incident angle;

extracting most in-focus image domains from each of the plural scanning electron microscope images captured at

the first incident angle, and creating a first all in-focus image being in focus over the whole image;

extracting most in-focus image domains from each of the plural scanning electron microscope images captured at the second incident angle, and creating a second all in-focus image being in focus over the whole image;

calculating a distance between corresponding two pixels in the first all in-focus image and the second all in-focus image;

calculating height information by each pixel on the basis of the distance between corresponding two pixels and a difference of angle between the first incident angle and the second incident angle; and

creating a height map on the basis of the height information by each pixel.

3. A sample observation method as claimed in Claim 2, further comprising a step of creating a three-dimensional bird's-eye view from the height map.

4. A sample observation method using a scanning electron microscope, comprising the steps of:

irradiating an electron beam to a sample at a first incident angle, and detecting first and second secondary signals emitted from the sample to capture a scanning

electron microscope image of the sample based on the first secondary signal and a scanning electron microscope image of the sample based on the second secondary signal;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images based on the first secondary signal and plural scanning electron microscope images based on the second secondary signal, at the first incident angle;

irradiating the electron beam to the sample at a second incident angle different from the first incident angle, and detecting first and second secondary signals emitted from the sample to capture a scanning electron microscope image of the sample based on the first secondary signal and a scanning electron microscope image of the sample based on the second secondary signal;

repeating the step while varying a focus in a step-wise manner, and capturing plural scanning electron microscope images based on the first secondary signal and plural scanning electron microscope images based on the second secondary signal, at the second incident angle;

extracting most in-focus image domains from each of the plural scanning electron microscope images based on the first secondary signal, captured at the first incident angle, and creating a first all in-focus image being in focus over the whole image;

extracting most in-focus image domains from each of the plural scanning electron microscope images based on the second secondary signal, captured at the first incident angle, and creating a second all in-focus image being in focus over the whole image;

extracting most in-focus image domains from each of the plural scanning electron microscope images based on the first secondary signal, captured at the second incident angle, and creating a third all in-focus image being in focus over the whole image; and

extracting most in-focus image domains from each of the plural scanning electron microscope images based on the second secondary signal, captured at the second incident angle, and creating a fourth all in-focus image being in focus over the whole image.

5. A sample observation method as claimed in Claim 4, further comprising a step of displaying the first all in-focus image and the third all in-focus image with a first color, displaying the second all-in focus image and the fourth all in-focus image with a second color, and observing a stereoscopic image.

6. A sample observation method as claimed in Claim 4, further comprising the steps of:

calculating a distance between corresponding two pixels in the first all in-focus image and the third all in-focus image;

calculating height information of the sample based on the first secondary signal by each pixel, on the basis of the distance between corresponding two pixels in the first all in-focus image and the third all in-focus image and a difference of angle between the first incident angle and the second incident angle;

creating a first height map on the basis of the height information of the sample based on the first secondary signal by each pixel;

calculating a distance between corresponding two pixels in the second all in-focus image and the fourth all in-focus image;

calculating height information of the sample based on the second secondary signal by each pixel, on the basis of the distance between corresponding two pixels in the second all in-focus image and the fourth all in-focus image and the difference of angle between the first incident angle and the second incident angle; and

creating a second height map on the basis of the height information of the sample based on the second secondary signal by each pixel.

7. A sample observation method as claimed in Claim 6, further comprising the steps of:

creating a first three-dimensional bird's-eye view with a first display color from the first height map;

creating a second three-dimensional bird's-eye view with a second display color different from the first display color from the second height map; and

displaying to superpose the first three-dimensional bird's-eye view and the second three-dimensional bird's-eye view.

8. A sample observation method as claimed in Claim 6, further comprising a step of calculating a difference of height by each of corresponding pixels in the first height map and the second height map.

9. A sample observation method as claimed in any of Claims 1 through 8, wherein the first incident angle and/or the second incident angle are set by using the deflection action occurring when passing an electron beam off the center of an objective lens of the scanning electron microscope.

10. A scanning electron microscope, comprising:

an electron beam source;

an electro-optic system that scans to converge a primary electron beam emitted from the electron beam source on a sample, including an objective lens;

an incident angle control means that controls an incident angle of the primary electron beam irradiated on the sample;

a detector that detects a secondary signal emitted from the sample by the primary electron beam being irradiated on the sample;

an all in-focus image processing means that extracts most in-focus image domains from each of the plural sample images of different focuses of the primary electron beam, and creates an all in-focus image being in focus over the whole image; and

a calculation means that calculates height information of the sample by each pixel, on the basis of two all in-focus images created by the all in-focus image processing means at two different incident angles set by the incident angle control means, from the plural sample images of different focuses of the primary electron beam each captured at the two different incident angles.

11. A scanning electron microscope as claimed in Claim 10, wherein the incident angle control means includes a deflection means that deflects the primary electron beam at

an objective point of the objective lens to make the electron beam fall on off the center of the objective lens.

12. A scanning electron microscope as claimed in Claim 10 or Claim 11, further comprising an image display means that displays images, and a means that creates a three-dimensional bird's-eye view from the height information of the sample calculated by the calculation means, wherein a created three-dimensional bird's-eye view is displayed on the image display means.

13. A scanning electron microscope as claimed in Claim 10 or Claim 11, further comprising a first detector that detects a first secondary signal and a second detector that detects a second secondary signal as the detector, wherein the calculation means calculates height information of the sample based on the first secondary signal and height information of the sample based on the second secondary signal.

14. A scanning electron microscope as claimed in Claim 13, wherein the first detector is a secondary electron detector, and the second detector is a reflection electron detector.

15. A scanning electron microscope as claimed in Claim 13 or Claim 14, further comprising an image display means that displays images, and a means that creates a three-dimensional bird's-eye view from the height information of the sample calculated by the calculation means, wherein a first three-dimensional bird's-eye view created from the height information of the sample based on the first secondary signal and a second three-dimensional bird's-eye view created from the height information of the sample based on the second secondary signal are displayed on the display means.

16. A scanning electron microscope as claimed in Claim 15, wherein the first three-dimensional bird's-eye view and the second three-dimensional bird's-eye view are displayed with different colors.